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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,992	11/04/2003	Scott Hetherton	MP1705-US4	6652

7590 05/23/2006

Tyco Electronics Corporation
Intellectual Property Law Dept.
MS R20/2B
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EXAMINER

PHAN, THIEM D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/701,992	HETHERTON ET AL.	
	Examiner	Art Unit	
	Tim Phan	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-10,12-23 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-10,12-23 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed on 3/03/06 has been fully considered and made of record.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 8-10, 12-23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barrett (6,172,591 B1) in view of Hogge (US 6,020,808).

With regard to claim 1, Barrett teaches a method for making multilayer conductive polymer device, comprising:

- (1) providing a polymeric assembly comprising:
 - (a) providing first and second laminates (Fig. 14, 116 & 122), each of which comprises a laminar polymer element having two conductive surfaces (Fig. 14, 118a-118d),
 - (b) providing a pattern of conductive material (Fig. 15, 126a) on at least one of the conductive surfaces on one laminate;

- (c) securing the laminates in a stack in a desired configuration, one conductive surface (Fig. 15A, 118d) of at least one of the laminates comprising an external conductive surface of the stack, and
- (d) making a plurality of electrical connections (Fig. 17, 156a & 156b) between a conductive surface of the first laminate and a conductive surface of the second laminate; and
- (2) subdividing the stack into individual devices through score lines (Fig. 6, 31a & 31b; col. 8, lines 36-56) each of which comprises at least one electrical connection.

Hogge teaches a method of fabricating a conductive polymer PTC device (Fig. 7, 10) with a stack in a desired configuration, one conductive surface (Fig. 7, 32 & 34) of each of the first and second laminates (Fig. 7, 18 & 20) comprising an external conductive surface of the stack in order to achieve a relatively high hold current while maintaining a very small circuit board footprint.

It would be obvious to one of ordinary skill in the art at the time the invention was made to combine the two teachings by applying the process of fabricating a conductive polymer PTC device, as taught by Hogge, to the method for making multilayer conductive polymer device taught by Barrett in order to achieve a relatively high hold current while maintaining a very small circuit board footprint

With regard to claim 2, Barrett teaches the pattern is formed by selectively removing a portion of conductive material (Fig. 15, 128) from at least one of the conductive surfaces on one

laminate.

With regard to claim 3, Barrett teaches a pattern of conductive material (Fig. 16, 126d) on at least one of the external conductive surfaces.

With regard to claim 4, Barrett teaches that the pattern on the external conductive surface is formed by selectively removing a portion of conductive material (Fig. 16, 128) from the external conductive surface.

With regard to claim 5, Barrett teaches that at least one of the patterned external conductive surfaces (Fig. 9, 32d) is at least partially covered with an insulating layer (Fig. 9, 38).

With regard to claim 6, Barrett teaches that an additional conductive layer (Fig. 11, 44) is added to at least part of at least one of the external conductive surfaces.

With regard to claim 8, Barrett teaches that at least one laminate is marked to provide a unique identification of orientation such as registration holes (Fig. 2, 24).

With regard to claim 9, Barrett teaches that the assembly comprises a third laminate (Fig. 14, 124).

With regard to claim 10, Barrett teaches that the selective removal of conductive material is accomplished by etching (Col. 7, lines 60-64).

With regard to claim 12, Barrett teaches that the electrical connection is made between conductive surfaces of the first and second laminates in the stack by (i) forming an aperture (Fig. 7, 36) which extends through the stack, and (ii) forming a conductive member (Fig. 10, 42) within the aperture.

With regard to claim 13, Barrett teaches that the electrical connections are positioned so

that the individual device comprises at least two electrical connections (Fig. 8, 40) once the score lines (Fig. 6, 31a & 31b) are cut.

With regard to claim 14, Barrett teaches that the laminar polymer element in at least one of the laminates comprises a PTC (Fig. 1, 14) conductive polymer composition.

With regard to claim 15, Barrett teaches that the laminar polymer element in each laminate comprises the same PTC (Fig. 1, 14, 18 & 19) conductive polymer composition.

With regard to claim 16, Barrett teaches that the laminar polymer element in each laminate comprises different or wide variety PTC conductive polymer composition (Col. 12, lines 23-26).

With regard to claim 17, Barrett teaches that the assembly comprises three laminates (Fig. 1, 14, 18 & 19), each of which comprises a PTC conductive polymer composition.

With regard to claim 18, Barrett teaches that the laminar polymeric elements comprises a wide variety PTC conductive polymer composition (Col. 12, lines 23-26) such as a ZTC conductive polymeric material or an NTC conductive polymeric material.

With regard to claim 19, Barrett teaches that at least one of the laminar polymeric elements comprises an insulating polymeric material (Fig. 9, 38).

With regard to claim 20, Barrett teaches that the patterns on the internal and external conductive surfaces (Fig. 16, 126c & 126d) are different.

With regard to claim 21, Barrett teaches that the individual devices are subdivided from the assembly using well known techniques (Col. 9, lines 41-45) such as a saw, a grinding disk or the like.

With regard to claim 22, Barrett teaches that the laminate markings (Fig. 2, 24 & Fig. 6, 31a & 31b) which provide a unique identification of orientation also provide delineation for subdividing into individual devices.

With regard to claim 23, Barrett teaches that the conductive surface on each laminate comprises a metal foil (Col. 3, line 44).

With regard to claim 27, Barrett in view Hogge teach a process of making PTC device including the several layers of laminate (Barrett; Fig. 15, items 124, 116, 120 & 122), which reads on applicants' claimed invention, except for having a third laminate comprising a laminar polymer element having two conductive surfaces.

It is mere matter of design choice to have a third laminate comprising a laminar polymer element having two conductive surfaces, since it is known in the art that there is a wide variety of possible physical configurations (Barrett, Col. 12, lines 29-33) for lamination such as repeating the pattern of items 14, 18 and 19 of figures 1-3A with the middle layer (18) sandwiched between two conductive layers (14 & 19) in order to have a third, a fourth, a fifth, etc ... laminate comprising a laminar polymer element having two conductive surfaces.

Response to Arguments

4. Applicants' arguments with respect to claims 1-6, 8-10, 12-23 and 27 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Applicants' amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 571-272-4568. The examiner can normally be reached on M - F, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tim Phan
Examiner
Art Unit 3729

tp
May 17, 2006



A. DEXTER TUGBANG
PRIMARY EXAMINER